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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/584,769	06/01/2000	Tomoya Nishibata	P107344-00001	5361

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EXAMINER

JOYCE, WILLIAM C

ART UNIT PAPER NUMBER

3682

DATE MAILED: 08/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/584,769

Applicant(s)

NISHIBATA ET AL.

Examiner

William C. Joyce

Art Unit

3682

-- **Th MAILING DATE of this communication appears on the cover sheet with the correspond nce address --**
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 4,6,8 and 10-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,7,9 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 June 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 05 June 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

This office action is in response to the amendment filed June 5, 2002 for the above identified patent application.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "crowning" (claim 3) must be shown or the feature(s) canceled from the claim(s). Examiner acknowledges that crowning of a roller was well known in the art (see applicants' remarks), however the Figures must clearly show each and every feature recited in the claims. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Rood (US Patent 4,715,733).

Rood discloses a thrust bearing arrangement in Figure 10 configured for orbital motion, the thrust bearing comprising a pair of opposing plates (20e,22e), a track pocket (32) formed in the plates, and a plurality of both end conical rollers (24a) disposed in the track pockets of the opposing plates. Referring to Figure 10, Rood illustrates the relation of the scroll swirl radius and the dimension between opposite tracks of the bearing plates is set in a relation of $1 < H/R < 5$.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 5, 7, 9, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rood (US Patent 4,715,733) as applied to claim 1 above, and further in view of Tanishiki (US Patent 5,846,000).

With respect to claim 3, Rood does not disclose the rollers having a crown, but Tanishiki discloses (column 11, lines 1-6) that the rollers can be formed with a crown. It would have been obvious to one of ordinary skill in the art at the time the invention was

made to form the contact surface of each roller disclosed by Rood with a crown, as taught by Tanishiki, in order to reduce edge loading thereby increasing the operating life of the rollers.

Rood does not appear to show the claimed linking members and positioning parts. Tanishiki teach a roller bearing assembly having linking members (10,11) configured to link opposing plates and positioning parts (20,21) which can engage a swirl unit. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the bearing arrangement of Rood with linking members, and positioning parts, as taught by Tanishiki, in order to facilitate the assembly of the bearing arrangement into a swirl unit.

With respect to claim 9, Rood illustrates the track pocket having an inside diameter as the swirl circle of the both-end conical roller, the inner sides of the opposing pair of track pockets are disposed in an eccentric state by the portion of the radius of the swirl circle of the both-end conical roller mutually in a plane view, and the both-end conical rollers are guided and held in nearly elliptical holding holes formed by overlaying these inner sides.

7. Claim 2 is rejected under 35 U.S.C., 103(a) as being unpatentable over Rood (US Patent 4,715,733) as applied to claim 1 above, and further in view of Tsutsui et al. (US Patent 5,752,775).

Rood does not disclose a junction surface including a continuous arc section connecting the conical surfaces, but it was known in the art to provide a continuous

arcuate section between two adjacent surfaces of a rolling bearing in order to reduce edge loading of the rolling element. For example, Tsutsui et al. illustrates in Figure 1(b) a rolling element (3) having a first surface (3a) connected to a second surface (3b) by a continuous arcuate section (Rb). Referring to the specification (column 2, lines 44+), Tsutsui et al. discloses that the arcuate section of the roller is used to eliminate the stress concentrations of the edges of the rollers in order to prolong their life and improve the quality of the rollers and to simplify the processing steps. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the rolling elements disclosed by Rood with a continuous arcuate section connecting adjacent surfaces, as taught by Tsutsui et al., in order to reduce edge loading thereby prolonging the operating life of the rolling element.

Response to Arguments

8. Applicant's arguments filed June 5, 2002 have been fully considered but they are not persuasive. Applicant argues that "Rood not only does not disclose the claimed invention" and "does not teach and suggest the claimed invention" (page 4, third full paragraph). It is acknowledged that Rood does not appear to provide a written description of the relation of a scroll swirl radius R and the dimension H between opposite tracks of the bearing plates, but Figure 10 of Rood clearly illustrates the claimed features, including the relation of the scroll swirl radius and the dimension between opposite tracks of the bearing plates is set in a relation of $1 < H/R < 5$.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Joyce whose telephone number is (703) 305-5114. The examiner can normally be reached on Monday - Thursday 7:30-5:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bucci can be reached on (703) 308-3668. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7687 for regular communications and (703) 305-7687 for After Final communications.

Application/Control Number: 09/584,769

Page 7

Art Unit: 3682

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.


William C. Joyce
August 19, 2002